

Models 561020E, 561055E, 561085E, 561520, 561555, 561585, 561604C

**READ THESE INSTRUCTIONS CAREFULLY BEFORE INSTALLING OR CONNECTING POWER TO THE ACTUATOR. THE ACTUATOR MUST BE INSTALLED, COMMISSIONED, OPERATED AND REPAIRED BY QUALIFIED PERSONNEL - COMPLYING WITH ALL APPLICABLE CODES, STANDARDS AND SAFETY REGULATIONS.**

### STORAGE

Actuators should be stored in a clean, dry environment at all times. Do not install the actuator outdoors or in humid environments without immediately supplying power to activate the internal heater. The thermostatically controlled heater will help prevent possible damage caused by condensation build up inside the actuator.

### INTRODUCTION

This document provides installation, operation and maintenance instructions for Valworx 5610/5615/5616 series electric on/off actuators. These actuators are typically used to operate quarter-turn valves. Every actuator has been fully tested prior to shipment to ensure trouble free operation.

### MOUNTING

The actuator can be mounted in any orientation. Valves can be direct mounted to the actuator using standard ISO5211 international mounting pad.



ISO5211 Valve Mounting Pad

### ANTI-CONDENSATION HEATER

The electric actuator has an internal thermostatically controlled anti-condensation heater. The 4 watt heater is automatically activated when power is supplied to the actuator. It is strongly recommended that power remain 'On' at all times to protect the actuator from damaging effects of condensation. The heater does not require a separate power supply or additional wiring.

### ENCLOSURE RATING

Actuator is rated IP67 weatherproof. The housing is anti-corrosion polyamide. Do not use these actuators in explosion proof or hazardous applications.

### TEMPERATURE RATING

Operating temperature range of the actuator is -4 to 158°F (-20 to 70 °C).

### DUTY CYCLE AND MOTOR PROTECTION

The 5610/5616 series actuators have built in electronic over torque protection against valve jams. These actuators are rated 75% duty cycle.

### LED POWER ON AND DIAGNOSTIC LIGHT

The external LED status light provides visual communication between the actuator and the user. The following chart will show the basic LED functions.

| LED Status   | Actuator Operational Status   |
|--|---|
| Closed: Solid Red<br>Open: Solid Green                               | Power On  |
| From Open to Closed: Red/Orange<br>From Closed to Open: Green/Orange | Actuator moving   |
| From Open to Closed: Red/Off<br>From Closed to Open: Green/Off       | Over-torque condition or possible problem with motor/control board or optional BSR system working |
| Orange/Off   | Actuator in MANUAL mode (after 90 seconds) or battery needs charging                              |



### MANUAL OVERRIDE

Valworx 5610/5615/5616 series electric actuators have a declutchable manual override for use during setup or loss of power situations. To operate the manual override, first move the manual override selector lever located on the side of the actuator to the 'MAN' position. Then rotate the manual override knob on top of the actuator to the desired position anywhere between 0 (closed) and 90 (open) degrees. These markings are located on top of the red cover. When finished, make sure the yellow pointer is within the 0 to 90 working quadrant. Then move the manual override selector lever back to the 'AUTO' position. You can now resume operation by deactivating power which resets actuator.



**Do NOT operate the manual override without first selecting 'MAN'.** Failure to do so may cause irreparable gear damage.



Manual Override Selector Lever

MAN: Manual Mode  
AUTO: Automatic Mode



Visual Position Indicator (shown in open position)

LED Power On and Diagnostic Light

Manual Override Knob

### VISUAL VALVE POSITION INDICATOR

Actuators are supplied with a local highly visual valve position indicator. The dome style indicator is black with a large yellow pointer and located on top of the red cover. There are 0 and 90° marks molded into the red cover to indicate the valve position. The 0 mark indicates closed and 90 the open position. The yellow pointer should rotate within the 90° quadrant.

### MAINTENANCE

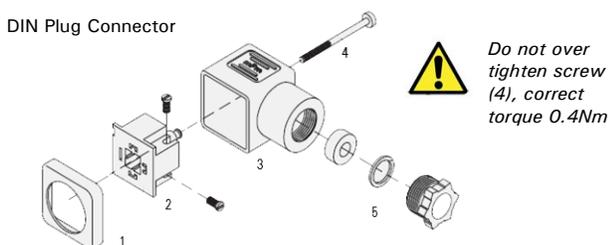
There are no field serviceable parts inside the actuator (except battery for models with BSR option) and no parts that require regular maintenance. The gear drive is pre-lubricated for life. Actuator should be cycled at least once per month. The housing may be cleaned with warm soapy water to keep it clean (no solvents). **DO NOT PRESSURE WASH**

## ELECTRICAL WIRING

Actuators are multi-voltage capable with automatic voltage sensing. Actuator circuit should be isolated from other actuators and equipment with its own independent fused protected system. All connections are made using the supplied DIN plug connectors. Larger connectors accept 8 to 10.5mm diameter round cable and the smaller connectors accept 5 to 6mm diameter round cable.

### DIN PLUG CONNECTORS

Disassemble DIN connector as shown in diagram below, wires are connected to screw terminals marked 1, 2, 3 and ground. To access screw terminal block (2), remove the retainer screw (4) and use a small screw driver to pry terminal block from housing (3). To ensure water-tightness use correct cable diameter, ensure connector gasket (1) is installed and tighten retainer screw (4) securely. Failure to do so could allow water ingress and cause major damage to the actuator.



## OPERATION: ON/OFF ACTUATORS

Standard on/off actuator requires power-to-open and power-to-close, stays in the last known position upon loss of power. On receipt of a continuous voltage signal, the motor runs and via a flat gear system rotates the actuator output (valve) 90 degrees. The motor is automatically stopped in each position by internal limit switches. On receipt of a reversing continuous signal, the motor turns in the opposite direction reversing the actuator position.

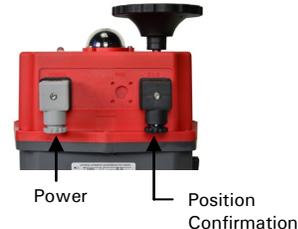
### OPERATION: ON/OFF ACTUATOR WITH BSR OPTION

Wiring is the same as standard ON-OFF version for actuators with BSR-Battery Spring Return option. The actuator requires power-to-open and power-to-close. Actuator will move to failsafe position via battery power with loss of external power. Actuator returns to pre-failure position upon power resumption. Maintaining power in either the open or closed position will trickle charge the internal battery and maintain a full charge.

5610/5615 Series

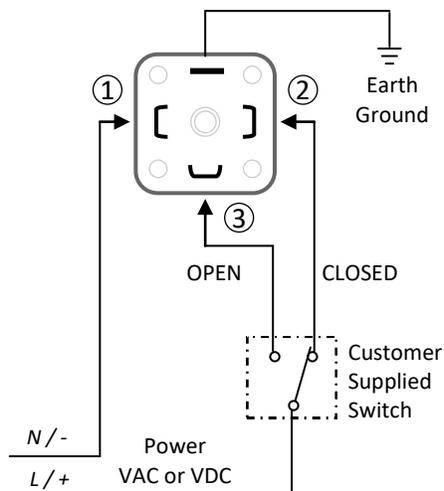


5616 Series

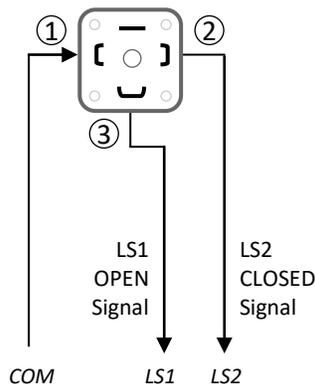


### Power Connection

**!** Before connecting power, confirm correct voltage is being applied



### Position Confirmation Limit Switches



**Wiring Main Power Connection:** Power is connected to the actuator via the large gray DIN plug connector. Wires are connected to screw terminals located inside the connector. User/installer to supply a three way switch, control relay, PLC or other suitable switching device to control the actuator position.

Power supplied to PIN 1 and PIN 2: CLOSED POSITION

Power supplied to PIN 1 and PIN 3: OPEN POSITION

Ground: Connect the flat pin on DIN connector to earth ground

**Wiring Position Confirmation Limit Switches:** Two auxiliary dry contact limit switches are provided to confirm the actuator (valve) open and closed position. Use of these switches is optional. Switch rating 3A@125/250VAC, 30VDC resistive load. Do not connect a ground to this connector.

PIN 1: Common

PIN 2: Signal to confirm Closed Position

PIN 3: Signal to confirm Open Position

**NOTES:** The Neutral (AC voltages) or Negative (DC voltages) must be connected to PIN 1. Power should be maintained, either in the open or closed position to activate the internal heater. This heater will help prevent condensation build up inside the actuator. **ACTUATOR SHOULD HAVE ITS OWN FUSED and ISOLATED CIRCUIT. Do not connect actuators in parallel.**

Wire Identification for Optional Prewired DIN Cables

|               |                       |
|---------------|-----------------------|
| PIN 1 - Brown | PIN 3 - Black         |
| PIN 2 - Blue  | GROUND - Green/Yellow |